

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number  
**WO 2004/052175 A3**

(51) International Patent Classification<sup>7</sup>: C12Q 1/68,  
C12P 19/34, C07H 21/02, G01N 33/48

Road, San Diego, CA 92129 (US). MCNEIL, John [US/US]; 6389 Castejon Drive, La Jolla, CA 92037 (US). CROOKE, Stanley, T. [US/US]; 3211 Piraqua Street, Carlsbad, CA 92009 (US).

(21) International Application Number:  
PCT/US2003/038830

(74) Agent: LEGAARD, Paul, K.; Cozen O'Connor, 1900 Market Street, Philadelphia, PA 19103 (US).

(22) International Filing Date: 5 December 2003 (05.12.2003)

(25) Filing Language: English

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(30) Priority Data:

60/431,319	6 December 2002 (06.12.2002)	US
10/326,051	18 December 2002 (18.12.2002)	US
10/325,526	18 December 2002 (18.12.2002)	US
10/325,527	18 December 2002 (18.12.2002)	US
10/323,233	18 December 2002 (18.12.2002)	US
60/443,443	29 January 2003 (29.01.2003)	US
60/443,788	30 January 2003 (30.01.2003)	US
60/447,529	14 February 2003 (14.02.2003)	US
10/660,122	11 September 2003 (11.09.2003)	US

Published:  
— with international search report

(71) Applicant (*for all designated States except US*): ISIS PHARMACEUTICALS, INC. [US/US]; 2292 Faraday Avenue, Carlsbad, CA 92008 US (US).

(88) Date of publication of the international search report:  
11 November 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/052175 A3

(54) Title: METHODS FOR RAPID IDENTIFICATION OF PATHOGENS IN HUMANS AND ANIMALS

(57) Abstract: The present invention provides methods of: identifying pathogens in biological samples from humans and animals, resolving a plurality of etiologic agents present in samples obtained from humans and animals, determining detailed genetic information about such as pathogens or etiologic agents, and rapid detection and identification of bioagents from environmental, clinical or other samples.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/38830

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/68; C12P 19/34; C07H 21/02; G01N 33/48  
 US CL : 435/6, 91.2, 536/23.1, 24.3; 702/19

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/6, 91.2, 536/23.1, 24.3; 702/19

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,268,144 B1 (KOSTER) 31 July 2001 (31.07.2001), see columns 17 and 18.	1-7, 9-19
---		-----
Y		8, 20-22
X	MUDDIMAN et al. Characterization of PCR products from Bacilli using electrospray ionization FTICR Mass spectrometry. Anal. Chem. 01 November 1996, Vol. 68, No. 21, pages 3705-3712, see entire document.	1-9, 12-19
---		-----
Y		10, 11, 20-22
X	HURST et al. MALDI-TOF analysis of polymerase chain reaction products from methanotrophic bacteria. Anal. Chem. 01 July 1998, Vol. 70, No. 13, pages 2693-2698, see entire document.	1-9, 12-19
---		-----
Y		10, 11, 20-22
Y	LACROIX et al. PCR-based technique for the detection of bacteria in semen and urine. J. Microbiol. Meth. 1996, Vol. 26, pages 61-71, see entire document.	10, 11
Y	YAO et al. Mass spectrometry based proteolytic mapping for rapid virus identification. Anal. Chem. 01 June 2002, Vol. 74, No. 11, pages 2529-2534, see page 2530, column 2, subheading "Database construction and query".	20-22



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

30 July 2004 (30.07.2004)

Date of mailing of the international search report

25 AUG 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, Virginia 22313-1450  
 Facsimile No. (703) 872-9306

Authorized officer

Jeffrey Friedman *J. Roberts Jr.*  
 Telephone No. (571) 272-1600

## INTERNATIONAL SEARCH REPORT

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	VAN BAAR et al. Characterization of bacteria by matrix assisted laser desorption/ionisation and electrospray mass spectrometry. FEMS Microbiol. Reviews. 2000, Vol. 24, pages 195-219, see entire document.	1-22

INTERNATIONAL SEARCH REPORT

PCT/US03/388

**Continuation of B. FIELDS SEARCHED Item 3:**

EAST, MEDLINE, BIOSIS, CAPLUS

search terms: DNA, nucleic, oligonucleotide, primer, probe, RNA, mass, spectrometry, maldi, tof, time, flight, bacteria, microorganism, virus, microbe, *silico*, computer, probability